

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **“Version with Markings to Show Changes Made.”**

In the Office Action, Claims 1-4 and 7-10 stand rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over European Patent Application EP 762,522 (*Tamaki*). Applicants respectfully submit that this rejection is improper.

“Under 35 U.S.C. § 102, anticipation requires that each and every element of the claimed invention be disclosed in the prior art ...” *Akzo NV v. U.S. International Trade Commission*, 1 U.S.P.Q.2d 1241, 1245 (Fed. Cir. 1986). The Court of Appeals for the Federal Circuit has held that “a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a *single* prior art reference.” *Verdegaal Bros v. Union Oil of California*, 814 F.2d 628, 631 (Fed. Cir. 1988) (*emphasis added*).

Under 35 U.S.C. § 103, the Patent Office has the initial burden of proving a *prima facie* case of obviousness. *In re Rijckaert*, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.” *In re Fritch*, 23 U.S.P.Q.2d 1780, 1783-84 (Fed. Cir. 1992).

In the pending Patent Application, Claim 1 is the only independent claim. As a matter of law, all of the claims that depend from independent Claim 1 incorporate all of the features and limitations of Claim 1.

Applicants respectfully submit that *Tamaki* fails to disclose or teach a number of features of the claimed invention. For example, newly amended Claim 1 requires that the carbon powder surface possess a single-layered looped closure structure and/or a multi-layered looped closure structure. This feature is fully supported by Applicants’ Specification (See Specification, p. 17, lines 20-21, p. 18, lines 1-3; p. 33, line 17; FIGS. 7, 8b, 9 and 11).

In contrast, nowhere does *Tamaki* disclose, explicitly or inherently, or suggest a looped closure structure, let alone single-layered and multi-layered looped closure structure as claimed in the present invention. Rather, *Tamaki* generally discloses/emphasizes carbon materials suitable for a lithium secondary battery

Claim 1 additionally requires that the density of the interstitial planar sections be no less than 100/ $\mu\text{m}$  and no more than 1500/ $\mu\text{m}$ . On pages 19-22 of their Specification, Applicants

provide extensive discussion of the details and rationale associated with this density requirement. In contrast, *Tamaki* does not disclose particular density requirements let alone reasons for requiring same.

Moreover, the Patent Office's reliance on the d spacing teaching of *Tamaki* as suggesting the structural characteristics of the graphite powders of the claimed invention is misplaced. Even if the d spacing is the same as between *Tamaki* and the claimed invention, the Patent Office cannot make the assumption that the other structural features would necessarily be the same as well. Indeed, Table 1 of Applicants' Specification illustrates that the c-access (002) planar lattice distance (d002) can remain relatively constant at increasing densities.

Further, the Patent Office admits that *Tamaki* teaches a process in which mesophase pitch is carbonized, milled, contacted with a boron source and heated to graphitization temperatures. This teaching, on its own, clearly fails to teach or suggest the subsequent heat treatment features as further required by Claims 5 and 6.

Indeed, Claim 5 requires that the carbon material is heated to scrape off the surface subsequent to graphitization, and then heated again in an inert environment. Claim 6 depends from Claim 5 and further limits the heating to scrape off the surface to include oxidizing heat. Applicants have demonstrated that heat treatments subsequent to graphitization can result in increased densities and therefore increase discharging capacities as illustrated in Table 1 on page 48 of the Specification. Specifically, these subsequent heat treatments allow the interstitial planar pitch to be reduced so that the interstitial planar section density can be significantly increased.

Further, in a previous Amendment dated October 19, 2001, Applicants amended Claim 1 to show that the carbon material includes a surface of cleavage formed by shearing thereby diminishing the lithium ion capacity loss of the carbon material. The surface of cleavage formed by shearing is not active for the lithium ion. Thus, the surface of cleavage formed by shearing as required by the claimed invention does not intercalate the lithium ion. In contrast, *Tamaki* specifically teaches a carbon-lithium intercalation compound. *See, Tamaki*, page 2, line 19.

Based on the fact that *Tamaki* fails to teach or suggest a number of features of the claimed invention, Applicants submit that *Tamaki* fails to anticipate and/or render obvious Claims 1-4 and 7-10. Accordingly, Applicants respectfully request that the prior art rejection of Claims 1-4 and 7-10 in view of *Tamaki* be withdrawn.

In the Office Action, Claims 1-4 and 7-10 stand rejected under 35 U.S.C § 102(e) as anticipated by or, in the alternative under 35 U.S.C. § 103(a) as obvious over United States Patent No. 6,156,457 (*Takami*). Applicants respectfully submit that this rejection is improper as Applicants believe that *Takami* fails to teach or even suggest a number of features of the claimed invention.

For example, *Takami*, like *Tamaki*, fails to disclose or suggest the single- and/or multi-layered closed loop structures and specific density requirements as required by newly amended Claim 1 of the present invention. As noted above in Applicants' discussion of *Tamaki*, it cannot be said that these features are inherently found in the compositions of *Takami*.

Moreover *Takami* fails to teach or suggest graphite powders that exhibit high crystallinity and high density of the interstitial planar section of the looped closed structures without having to utilize special, expensive materials to manufacture same. Additionally, for example, *Takami* fails to teach or suggest a surface of cleavage formed by shearing that does not intercalate the lithium ion. Applicants respectfully submit that for the reasons stated above, Claims 1-4 and 7-10 are patentable over *Takami*. Accordingly, Applicants respectfully request that this rejection be withdrawn.

In the Office Action, Claims 1-10 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the claimed invention.

Regarding Claims 1, 5 and 6, the Patent Office asserts that the term "causing scraping" and "causing scraping...to occur" are unclear. From the outset, Applicants respectfully point out that it is well-established that a patent applicant may be his own lexicographer. *In re Pilkington*, 411 F.2d 1345, 1349-50, 162 U.S.P.Q. 145, 148 (CCPA 1969). In this regard, Applicants submit that it is entirely appropriate for Applicants to refer to this particular processing step as scraping. Support for Applicants' use of these terms is found in Applicants' Specification on pages 34-36.

The Patent Office additionally rejected Claim 1 under 35 U.S.C. § 112, second paragraph, based on an incorrect spelling of the word "shearing." In response, Claim 1 has been amended accordingly.

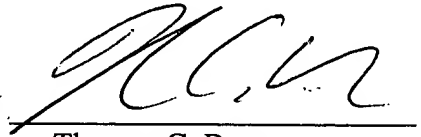
Accordingly, Applicants respectfully submit that the rejections raised by the Examiner with respect to the present application have been overcome and, thus, be withdrawn.

Thus, for the foregoing reasons, Applicants respectfully request reconsideration of the present application and earnestly solicit an early allowance of same.

Respectfully submitted,

BELL, BOYD & LLOYD LLC

BY

A handwritten signature in black ink, appearing to read 'T. C. Basso', written over a horizontal line.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE**In the Claims:**

1. (Four times Amended) A graphite powder comprising a carbon material containing 0.01 to 5.0 wt% of boron and ~~having a looped closure structure~~ including a surface structure selected from the group consisting of a single-layered looped closure structure, a multi-layered looped closure structure, and combinations thereof, at an end of a graphite c-planar layer on at least a surface of cleavage formed by ~~sheering~~ shearing; wherein the density of the interstitial planar sections between neighboring closure structures is not less than 100/ $\mu\text{m}$  and not more than 1500/ $\mu\text{m}$ ; and wherein said carbon material is surface processed by scraping the surface of the graphite c-planar layer.

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